(b)(i) As coinsurance rates rise (from 0% up to 95%) health expenditures fall on average. So consumer responds to higher prices (their coinsurance share) by decreasing demand.

(ii) Elasticity = \frac{(340 - 224)}{\frac{(340 + 224)}{2}} = \frac{116}{282} = 0.411 = -0.206.

(c)(i) The provider has an incentive to minimize health care costs.

(ii) Physician-induced demand is where doctor advice pushes out the demand curve. This leads to higher quantity and price of health care.

2.(a)(i) Yes. Expected loss = 0.2 x 20,000 + 0.8 x 5,000 = $8,000. This equals the premium. (ii) Individual variance = 0.2 × (20,000 – 8,000)^2 + 0.8 × (5,000 – 8,000)^2

= 0.2 × 144,000,000 + 0.8 × 9,000,000 = 36,000,000.

Variance of group average = 36,000,000/100 = 360,000.

Standard deviation of average loss = sqrt(3,600) = $600.

With probability .95 within two stand. deviations of mean = 8,000 ± 2x600 = (6,800, 9,200).

(b)(i) Several answers possible. In general adverse selection exists when asymmetric information leads to over-supply of low-quality goods. OR In health care adverse selection arises when insurance markets have high-risk (expected high expenses) and low-risk (expected low expenses) leads to a low-quality insurance product for the low risk. OR Adverse selection arises for difference between those who buy insurance (high risk, meaning high expected loss) and those who do not (low risk).

(ii) It is difficult to have private insurance markets that provide a good policy for both high-risk and low-risk individuals.

(c) We move from (Q_100, P_100) to (Q_50, P_50). So ...

(i) Change in health expenditure is C + B + F (equals P_100 × (Q_50 – Q_100)).

(ii) Moral hazard loss is C (difference between societal cost (P_100) and maximum willing to pay (given by the demand curve).

3.(a) \frac{|0.44 – 0.30|}{sqrt(0.08^2 + 0.06^2)} = 0.14 / 0.10 = 1.40.

Since |T| < z_{0.05} = 1.96 do not reject H_0: \mu_1 = \mu_2 in favor of H_A: \mu_1 \neq \mu_2.

The difference is not statistically significant at significance level 5%.

(b) Passive vs none: MC per QALY saved = (40,000-0)/(4x0.5–2x0.4) = $40,000/1.2 = $33,333.

Aggressive vs none: MC per QALY saved = (200,000-0)/(10x0.6–2x0.4) = $200,000/5.2 = $38,500. Prefer passive treatment to aggressive as lower MC per QALY saved.

(c) Cost: 100,000 x $20 + 0.8 x 100 x $200 + 0.1 x 100,000 x $200 = 2,000,000+16,000+2,000,000=$4,016,000 (or could instead have 0.1 x 99,900 x $200 unneeded tests giving $4,014,000 total). Benefit = 0.8 x 100 x $20,000 = $1,600,000.

The first test is not worthwhile as cost exceeds benefit.

Version A (continued)

4.(a) False. Insurance company pays 60% so coinsurance rate is 40%.

(b) True. More low-income people go into Medicaid.

(c) False. Only HMO insurance has a gatekeeper.
Econ 132 – Final Solutions

5. (a)(i) Most obvious answer is adverse selection.
(ii) Most obvious answer is problems in raising tax to fund.

(b)(i) and (ii) Answers include waiting lists, gatekeeper, only providing the most cost-effective treatments.

(c)(i) Beveridge system is single-payer government health insurance with health providers government employees.
(ii) Bismarck system is compulsory private insurance with private hospitals and doctors and strict price controls.

6. (a)(i) Social MB = 100 million \( (1 - 0.2Q) = (100 - 2Q) \) million. Social MC = 20 million.
Social MB = Social MC implies \( 100 - 2Q = 20 \) so \( Q = 40 \).
(ii) Various answers are possible, including information, government research funding.

(b) Positive externality of vaccination

(c)(i) Negative aspect: introduces monopoly power to holder of the patent.
(ii) Positive aspect: encourages innovation (discovery of new drugs).

7. (a)(i) No. The costs of obesity are all borne by the obese person.
(ii) There has been a steady rise from around 10-15% in 1975 to 30-35% today.

Version A (continued)

7. (b)(i) We have \( BMI = \text{other factors} + 1.1 \text{alcoholprice} - 0.7 \text{alcoholprices}^2 \)
So \( dBMI/d\text{alcoholprice} = 1.1 - 1.4 \text{alcoholprice} = 1.1 - 1.4\times 1.0 = -0.3 \).
Elasticity = \( (dBMI/d\text{alcoholprice}) \times (\text{alcoholprice})/\text{BMI} = -0.3 \times (1.0 / 26) = -0.0115 \).
(ii) The regression failed to control for a time trend. #restaurants may just be picking up a trend over time due to other factors.

(c)(i) Life expectance is several years lower in the U.S. than in other major developed countries.
Multiple choice

Question 1  b  50% public / 50% private
2  a
3  d
4  d  It is .25 x 80 + .75 x 200 = 170.
5  d  The MB was always > 0 but became < MC
6  b
7  d  Both were necessary to do the calculations.
8  a  Only required for the initial drug
9  b
10  b
11  b
12  d  From assignment web question
13  b
14  a
15  c
16  b
17  b
18  d

Scores out of 57

Curve (Indication only: Course Grade is based on Total Score!)

<table>
<thead>
<tr>
<th>Percentile</th>
<th>Score</th>
<th>Grade</th>
<th>GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>75th</td>
<td>43</td>
<td>A</td>
<td>78</td>
</tr>
<tr>
<td>Median</td>
<td>38</td>
<td>B+</td>
<td>72</td>
</tr>
<tr>
<td>25th</td>
<td>33</td>
<td>B</td>
<td>64</td>
</tr>
</tbody>
</table>

75th percentile 43 (78 %) (Ave GPA 2.63 on this curve)  
Median 38 (72 %)  
25th percentile 33 (64 %)  

C+ 35 and above
C 33 and above
B+ 41 and above
B 39 and above
B- 37 and above
A 45 and above
A- 43 and above
A 45 and above